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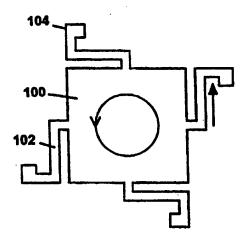


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(63) Related by Continuation (CON) or Continuation-in (CIP) to Earlier Application	ı-Part	(88) Date of publication of the international search report: 29 December 1999 (29.12.99)			
US 09/056,97 Filed on 8 April 1998 (6					
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(74) Agent: FEIGENBAUM, David, L.; Fish & Richard 225 Franklin Street, Boston, MA 02110-2804 (US		,			
(54) Title: INTERFEROMETRIC MODULATION OF R	ADIA	ON			

(57) Abstract

The invention features an interferometric modulator comprising a cavity defined by two walls. At least two arms connect the two walls to permit motion of the walls relative to each other. The two arms are configured and attached to a first one of the walls in a manner that enables mechanical stress in the first wall to be relieved by motion of the first wall essentially within the plane of the first wall.



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Internatic Application No PCT/US 99/07271

a classif IPC 6	ication of subject matter G02B26/02		
According to	International Patent Classification (IPC) or to both national classification	and IPC	
8. FIELDS S	SEARCHED		
IPC 6	cumentation searched (classification system followed by classification s G02B B81C G09F		
	ion searched other than minimum documentation to the extent that such		rohed
Electronio da	ata base consulted during the international search (name of data base a	and, where practical, search terms used)	
C. DOCUME	ENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the releva	ent passages	Relevant to claim No.
X	WO 95 30924 A (ETALON INC ;MILES M (US)) 16 November 1995 (1995-11-16)	1-8,10, 11,15, 23,24
A	page 33, line 20 -page 34, line 15 28	5; figure	14
			·
Fur	ther documents are listed in the continuation of box C.	X Patent family members are listed	in annex.
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	d mailing address of the ISA European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,	Authorized officer SCHEU, M	

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C.(Continua Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ARATANI K ET AL: "PROCESS AND DESIGN CONSIDERATIONS FOR SURFACE MICROMACHINED BEAMS FOR A TUNEABLE INTERFEROMETER ARRAY IN SILICON" PROCEEDINGS OF THE WORKSHOP ON MICRO ELECTRO MECHANICAL SYSTEMS (ME, FORT LAUDERDALE, FEB. 7 - 10, 1993, no. WORKSHOP 6, 7 February 1993 (1993-02-07), pages 230-235, XP000366885 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS ISBN: 0-7803-0957-X page 232	1-8,10,
X	GOOSSEN K W ET AL: "SILICON MODULATOR BASED ON MECHANICALLY-ACTIVE ANTI-REFLECTION LAYER WITH 1 MBIT/SEC CAPABILITY FOR FIBER-IN-THE-LOOP APPLICATIONS" IEEE PHOTONICS TECHNOLOGY LETTERS, vol. 6, no. 9, 1 September 1994 (1994-09-01), pages 1119-1121, XP000468079 ISSN: 1041-1135 the whole document	1-7, 9-11,15
X .	EP 0 667 548 A (AT & T CORP) 16 August 1995 (1995-08-16) column 3, line 12 - line 35 column 4, line 54 -column 6, line 30; figure 2	1-7, 9-11,15

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International application No. PCT/US 99/07271

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-15,23,24
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-15,23,24

An interferometric modulator comprising a cavity defined by two walls wherein the first wall is movable relative to the second wall and within the plane of the first wall

2. Claims: 16-18

Interferometric modulator comprising three walls and control circuitry for driving at least one of three walls

3. Claims: 19-20

an interference modulator comprising spacers mounted to form part of one of the walls

4. Claims: 21,22,25

Interference modulator comprising means to control the response time of the modulator

5. Claim: 26

6. Claims: 27-32

An interferometric modulator, comprising walls and a support and at least one of the walls or the support comprising at least two materials

7. Claims: 33-38,44-48

A method of etching and patterning a microelectromechanical structure ${\bf r}$

8. Claims: 39-43

a method of making arrays of microelectromechanical structure on a production line

Intermation on patent family members

PCT/US 99/07271

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9530924 A	16-11-1995	US 5835255 A EP 0801766 A JP 10500224 T	10-11-1998 22-10-1997 06-01-1998
EP 0667548 A	16-08-1995	US 5500761 A CA 2137063 A US 5654819 A US 5589974 A	19-03-1996 28-07-1995 05-08-1997 31-12-1996